

XV.—*Monograph of the genus Catops*.

By ANDREW MURRAY, Edinburgh.

Group II. (Subgenus CATOPS (true).)

Mesosternum not keeled; body oblong; antennæ more or less club-shaped or thickened towards the apex, eighth joint decidedly smaller than seventh and ninth. The posterior trochanters not more developed in the males.

1st Subdivision. *Base of thorax decidedly narrowed or cut in, so that the thorax and elytra do not form a continuous outline. Middle tarsi widened in the males.*

6. *C. acicularis*, Kraatz.

Catops acicularis, Kraatz, Stett. Ent. Zeit. xiii, 406. 6.

Oblongus, ferrugineus; antennis subfiliformibus; thorace transverso, postice latiore, angulis posticis obtusiusculis; elytris substriatis transversim strigosis.

Long. $1\frac{1}{4}$ lin.

Of the slender form of the species in the foregoing group, but proportionally not so elongate; ferruginous brown; easily distinguished from the remaining species of this group by its transversely strigose elytra. The antennæ are slender, reddish brown, not quite so long as the elytra; first joint somewhat shorter than the second; second equal to the third; third equal to the fifth; fourth somewhat longer and stouter than the sixth; eighth only one-third of the length of the seventh, and somewhat narrower than those on each side of it; ninth somewhat shorter than the seventh, almost somewhat stouter, and equal to the tenth; eleventh of the stoutness of the preceding, about half as long, from the middle forward cone-shaped acuminate. The head is densely and finely punctate, pitchy-black. The thorax is nearly of the breadth of the elytra, wholly light, twice as broad as long, slightly arched, the sides wholly rounded, somewhat more strongly behind than in front, so that the greatest breadth is behind the middle; the anterior angles are somewhat bent down, strongly rounded, the posterior angles are obtuse-angled. The basal margin is extremely lightly sinuated on both sides towards the scutellum; the upper side of the thorax is moderately densely and finely shagreen-punctured. The elytra are uniform oblong, gradually narrowed towards the apex, each being rounded; they have feeble traces of longitudinal striae, and besides are transversely strigose almost parallel with the base of the thorax. The legs are ferruginous brown and slender.

I have not seen this species in nature, and have merely copied M. Kraatz's description. It appears to be readily recognized among its neighbours by its transversely strigose elytra. It is found in Sicily, and appears to be rare, M. Kraatz having only seen three specimens.

7. *C. fuscus*, Panz.

Helops fuscus, Panz. Fn. Germ. 18. 1.

Luperus fuscus, Fröhl. Naturf. 28. 24. 2. t. 1. f. 16.

Catops sericeus, Payk. Fn. Suec. i. 342. 1.

Catops rufescens, Fab. Syst. El. ii. 563. 1.

Choleva sericea, Spence, Linn. Trans. xi. 145. 6.

Catops festinans, Gyll. Ins. Suec. iv. 314. 1-2.

Catops fuscus, Erichs. Käf. d. M. Br. i. 235. 3; Sturm, Deutschl. Fn. xiv. 13. 5. t. 274. f. a. A; Heer, Fn. Helv. i. 379. 4; Redt. Fn. Austr. 164. 11; Kraatz, Stett. Ent. Zeit. xiii. 407. 8; Fairm. & Laboulb. Fn. Ent. Fr. i. 101. 7.

Breviter ovatus, *fuscus*; antennis subfiliformibus; thorace transverso, *postice latiore*, angulis posticis rectis; elytris rufo-brunneis, substriatis.

Long. 2 lin.

Dark brown, short oval. Antennæ ferruginous brown, very feebly thickened towards the extremity, not quite so long as the head and thorax; first joint longer than the succeeding joints; second very little shorter than third; third and fourth very nearly equal; fifth and sixth equal, both a little shorter than fourth; seventh not much if at all longer than sixth, but a good deal broader; eighth shorter than those on each side of it, but not greatly narrower; ninth and tenth about same size, and eleventh acuminate and nearly twice as long as the tenth. Head and thorax black, very densely punctate, with a yellowish grizzly adpressed pubescence; mouth reddish; edges of thorax ferruginous brown. *Thorax* rounded on the sides, *broadest behind the middle*, at the base almost twice as broad as long, *very slightly rounded in at the posterior angles*, which are right-angled and have a slight tendency to project behind. *Elytra reddish brown*, covered with a bluish-grey bloom; a little widened in the middle, *apex almost acuminate*; densely punctate, and with striae visible towards the apex, scarcely perceptible in front. Legs reddish brown.



This species is easily distinguished from the rest of the section by the breadth of its thorax behind, which gives its outline at first sight, and before the junction of the thorax and elytra is examined, very much the appearance of being a continuous oval slightly interrupted at the base of the elytra.

It is widely distributed, being found both in England and Scot-

land, France, Germany, and most of Europe. Kraatz says that it is seldom or never found under leaves or fungi, but in cellars, stables, potato-heaps, &c. Fairmaire and Laboulbène mention it as having been also taken in moss at the roots of trees. Stephens gives "carcasses" as its habitat, and rightly enough so far as regards the species he has under this name (viz. a pale variety of *chrysomeloides*), but incorrectly as regards the true *fuscus*. It is, however, easy to predicate of each species by a simple inspection of its antennæ whether it is a carcasse-feeder or not. Those species with filiform or slightly thickened antennæ are found among leaves and moss, &c. Those with heavy, thick, clubbed antennæ are found under dead birds or small mammals. In other words, those which have to seek out putrescent matter for their food, or a nidus for their eggs, are furnished with largely developed antennæ to enable them to smell it out.

8. *C. meridionalis*, Aubé.

C. meridionalis, Aubé, Ann. Soc. Ent. Fr. viii. 326. 34. t. 11. f. 2; Kraatz, Stett. Ent. Zeit. xiii. 428. 10.

Ovatus, convexiusculus, piceus; antennis pedibusque ferrugineis; thoracis angulis posticis valde productis; clytris oblongiusculis, striatulis.

Long. $2\frac{3}{4}$ lin.

Pitchy-brown; in general appearance occupying the middle between *fuscus*, Panz., and *picipes*, Fab. Head black and finely punctate. Antennæ and palpi ferruginous; antennæ of the length of the head and thorax, only feebly thickened towards the point; first joint equal in length to the third, and nearly twice as long as the second; fourth equal to the fifth, also to the sixth, and somewhat shorter than the third; seventh equal to the second, yet somewhat stronger than those on each side of it; eighth scarcely half so long as the seventh, scarcely more slender, somewhat shorter than the ninth; tenth equal to the ninth; eleventh acuminate. The thorax is pitchy-brown, moderately convex, transverse, of the breadth of the clytra, once and a half as broad as long, emarginate in front, cut almost straight behind, where it is broadest; the sides are broadly rounded; the anterior angles depressed and rounded, the posterior projecting behind and somewhat acute. Scutellum tolerably large, finely punctate and reticulate. Elytra brown, oblong oval, nearly twice as long as broad, finely punctate and reticulate, and marked on each side of the suture with a sufficiently distinct stria, and with several others on the disk much less perceptible, particularly in front. Legs ferruginous.

Fig. 7.



This species at first sight looks very like an overgrown *fuscus*, Panz., but closer examination shows that it is a good species, the proportions of the joints of the antennæ as well as other particulars being wholly different. In a specimen which I owe to the kindness of M. Kraatz, I observe that the development of the posterior angles of the thorax is considerably exaggerated in the outline I have given, which is copied from Aubé's own figure. Aubé also states it is larger than *picipes*, Fab., which had hitherto been considered the largest known *Catops*; but my specimen is scarcely so large as the smaller individuals of *picipes*, from which I should infer that it ought perhaps rather to be stated as being about the same size as *picipes*. Its entirely ferruginous colour and the projecting posterior angles of the thorax furnish a tolerably good *primâ-faciè* guide to the species. It is found in Sicily, and is as yet scarce in collections.

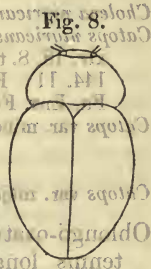
9. *C. picipes*, Fab.

Hydrophilus picipes, Fab. Syst. El. i. 251. 10.
Ptomaphagus picipes, Illig. Käf. Pr. 893.
Catops striatus, Duft. Fn. Aust. iii. 74. 3.
blapsoides, Germ. Ins. Sp. Nov. 84. 142?
picipes, Erichs. Käf. d. M. Br. i. 236. 5; Sturm, Deutschl. Faun. xiv. 17. 7. t. 274. f. c. C.; Heer, Fn. Helv. i. 378. 5; Redt. Fn. Aust. 144. 10; Kraatz, Stett. Ent. Zeit. xiii. 428. 9; Fairm. & Laboulb. Fn. Ent. Franç. i. 300. 4.

Ovatus, convexus, niger; antennis subfliformibus, pedibusque piceis, apice testaceis; thorace transverso basi sublato, angulis posticis obtusis; elytris apice profunde striatis.

Long. 2½ lin.

This is the largest species of the genus, with the exception of the last. Oval, convex, black. Antennæ scarcely thickened at the end, reddish brown at the base, blackish at the extremity, excepting the last joint, which is light yellow. Head very densely and finely punctate, mouth reddish. The thorax is likewise very densely and finely punctate, with a fine silky pubescence, black, strongly rounded on the sides, narrowed both in front and behind, but most in front, posterior angles obtuse, posterior margin very slightly sinuated on each side, the greatest breadth behind the middle. Elytra oval, very convex, black, with a slight grey hoar-frost bloom upon them, very densely punctate, with striæ faint in front, deeper behind. Under side black, abdomen and legs brown, tibiæ ferruginous brown, tarsi pale ferruginous.



The only species with which there is any risk of this being

confounded is *C. nigricans*, Spence. Its large size removes it from all but it and *C. meridionalis*, Aubé, and *C. chrysomeloides*, Spence. Independent of other distinctions, its colour at once distinguishes it from *meridionalis*, which is ferruginous, while this is black. It likewise wants the projecting posterior angles of the thorax. Its subfiliform antennæ distinguish it from *C. chrysomeloides*, which has the heaviest and thickest clubbed antennæ in the genus; and there only remains *C. nigricans*, to which it is much more allied. Both have subfiliform antennæ, pale at the base and apex, and the proportionate length of the joints of the antennæ is much the same; they are both black, with ferruginous legs; and I have specimens of *nigricans* very little inferior in size to *picipes*, but *picipes* is a broader and more robust-looking insect. It has the elytra much more convex and bellied out, and its thorax is differently shaped, being more contracted in front; and very commonly *nigricans* has two or three depressions on the disk of the thorax, which *picipes* has not. The posterior angles of the thorax in *nigricans* have a slight tendency to project behind, which is not the case in *picipes*.

This species is found over the greater part of Europe, but is rare. I have not yet seen a British specimen. Kraatz observes that it is principally found in fungi. Fairmaire and Laboulbène say it is taken in the trunks of trees (I presume decayed).

10. *C. nigricans*, Spence.

Choleva nigricans, Spence, Linn. Trans. xi. 141. 3.

Catops nigricans, Erichs. Käf. d. M. Br. i. 237. 6; Sturm, Deutschl. Fn. xiv. 18. 8. t. 273. f. c. C.; Heer, Fn. Helv. i. 380. 6; Redt. Fn. Aust. 144. 11; Kraatz, Stett. Ent. Zeit. xiii. 429. 11; Fairm. & Laboulb. Fn. Ent. Fr. i. 303. 16.

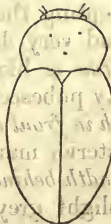
Catops var. minor, *C. fuliginosus*, Erichs. Käf. d. M. Br. i. 239. 10; Sturm, Deutschl. Fn. xiv. 28. 13; Redt. Fn. Aust. 771.

C. caliginosus (Mus. Berol.).

Catops var. major, *C. longipennis*, Chaud. Bull. de Mosc. 1845, No. 111. 196.

Oblongo-ovatus, niger seu piceo-brunneus; antennis longioribus, obsolete clavatis, ferrugineis, apice plerumque fusciscentibus; thorace transverso, postice latiore, angulis posticis acuminatis; elytris apice substriatis.
Long. $1\frac{3}{4}$ lin. — 2 lin.

Fig. 9.



Oblong-oval, convex. Black or piceous brown. Antennæ a little longer than the head and thorax, very slightly thickened towards the extremity, sometimes entirely ferruginous, more generally ferruginous at the base and becoming fusciscent towards the point. Head finely punctate, mouth reddish brown. Thorax very densely and finely punctate, finely pubescent, a little narrower than the elytra,

sides rounded, *the greatest width at the middle*; very generally with two or three depressions on the disk; *posterior angles* with a point, *projecting a little behind*, which makes the posterior margin appear to be visibly sinuate on both sides. Elytra blackish brown, sometimes paler, *elongate-oval*, somewhat convex, densely and finely punctate; faintly striate, the striae perceptible towards the extremity, effaced in front. Under side black; legs reddish brown, thighs blackish.

Kraatz gives the following remarks on the larger and smaller varieties which have been described under the names of *C. longipennis*, Chaud., and *C. fuliginosus*, Erichs.; viz.—
 “A. Larger, for the most part female specimens, differ from the smaller males in many particulars, so that one may easily be led to suppose them distinct species. In the first place, the antennæ of these larger examples are somewhat more elongate than those of the smaller specimens, and when they belong to females are also somewhat less stout, which makes them when taken as a whole look much longer than the antennæ of the smaller individuals. Then the elytra are more belled out, so that the whole animal assumes a more convex appearance; at the same time also the striae of the elytra are more feebly marked in this than in the other kind. Such examples are generally found along with the rest, but not frequently, and are not of the typical form. If there had not been laid before me by himself one of the original typical examples from Germar's fine collection, it would not have been possible for me, from the short and imperfect description which Chaudoir gives of his *C. longipennis**, to perceive in it the just-described variety of *C. nigricans*, Spence.”

The description by M. Chaudoir to which M. Kraatz refers is as follows, viz. :—

“Near the *umbrinus*, a little larger, form more elongate: thorax broader, more rounded on the sides: elytra less swollen out, flatter, longer: antennæ more slender, last joint of these smaller and more pointed.”

“A male, found at Kiew in the garden of the town under dry leaves, in the beginning of September †.”

As to Erichson's *fuliginosus*, M. Kraatz goes on—

“B. The type of *C. nigricans*, sp., is the one described as *C. fuliginosus* by Erichson, according to two specimens left by Dr. Meur to the Royal Museum (of Berlin). Those specimens which are in the Royal Museum as *C. nigricans* are not fully coloured, and, when we have only a few specimens for comparison, such have altogether a different appearance from the full-coloured specimens. If we compare more minutely Erichson's clear descriptions of both species, we find, besides an agreement

* Kraatz in *loc. cit.* †

† Chaudoir in *loc. cit.*

on the most important points, only two differences. One is that the antennæ of *C. fuliginosus* are darker, which proceeds from the perfectly full colouring of the animal. The other again is that the sinuation of the hind margins of the thorax (which particularly characterizes this species) is in *C. nigricans* distinct, in *C. fuliginosus* feeble,—a mark, which in individual cases is not always present in equal force, and which also appears to the eye of the observer in different aspects stronger or weaker than is really the case. There are no specimens named *C. fuliginosus*, Erichs., in the Royal Museum, but instead of it are *C. caliginosus*, Erichs., evidently projected from the description of *C. fuliginosus*. We must suppose that Erichson had originally given his specimens of *C. fuliginosus* the name of *C. caliginosus*, and as such also determined them to his acquaintances, but subsequently allowed it to remain for reasons unknown to me*.

In dealing with a description emanating from Erichson, it will probably be better that I quote his description of *C. fuliginosus*, leaving the reader to form for himself his opinion of its value as a species. It is in these terms:—

“Oblongo-ovatus, niger; antennis obsolete clavatis, rufo-piceis, apice nigricantibus; thorace basi apiceque latitudine æquali, angulis posticis acuminatis; elytris obsolete striatis.

“Long. $1\frac{2}{3}$ lin.

“Very closely allied to the foregoing (*nigrita*, Erichs.). The antennæ have the same form and the same proportions, but are differently coloured; they are brownish red, the last four or five joints including the terminal blackish. The thorax is somewhat shorter than in the foregoing, a little narrower than the elytra, lightly rounded on the sides; the posterior angles pointed; the posterior margin on each side between the edge and the middle twice feebly sinuated. The elytra are oblong oval, very indistinctly striated. The colour of the body is black; the head and thorax have a fine yellow-grey pubescence; the elytra are more brownish black, with a grey hoar-frost rime on them. The legs are ferruginous brown, the thighs blackish †.”

The impression the description rather leaves upon my mind is, that Erichson's intended *fuliginosus* may have been the species subsequently described by Kellner under the name of *coracinus*. The yellow pubescence on the thorax for instance, and the ash-grey rime on the elytra, apply well to it, but not to *nigricans*: on the other hand, the size, $1\frac{2}{3}$ lin., is too much for *coracinus*. Again, it may be that the small examples of *nigricans* standing under the name of *caliginosus* in the Berlin Museum collection, were not published by Erichson from a doubt of their being

* Kraatz in *loc. cit.* †

† Erichson in *loc. cit.*

distinct, and that *C. fuliginosus* may have been described from other specimens, although they are not now in the collection in the Berlin Museum.

Still, in the face of M. Kraatz's deliberate opinion, fortified as it is by the specimens in the collection of the Berlin Royal Museum, and also doubtless by the traditions which must remain of Erichson's own views in a place which has only so recently been deprived of him, I have not ventured to carry my difference of opinion further than to submit the above suggestions for the consideration of the reader.

I have only to add with reference to this species (*C. nigricans*, Sp.), that the readiest distinction between it and such others (except *C. picipes*) as are likely to be mistaken for it, is furnished by the longish almost subfiliform ferruginous antennæ. In my observations on *C. picipes* I have already noticed the *primâ-faciè* differences existing between it and this species.

Widely distributed, being found in Scotland and England, France, Germany, and most of Europe, but nowhere common.

11. *C. coracinus*, Kellner.

Catops coracinus, Kelln. Stett. Ent. Zeit. vii. 177. 3; Redt. Fn. Aust. 771; Kraatz, Stett. Ent. Zeit. xiii. 431. 12.

Ovatus, niger; antennis obsolete clavatis, *rufopiceis*; thorace transverso, basi latiore, *angulis posticis distincte rectis*; elytris obsolete striatis.

Long. $1\frac{1}{2}$ lin.

This has a considerable resemblance to *C. nigricans*, Spence, in the form of the elytra and antennæ, but is smaller, and more continuous in its outline: the hinder angles of the thorax are very slightly acuminate, so slightly as to be scarcely observable except by minute examination: the elytra are indistinctly striated. The antennæ are as long as the head and thorax, slightly thickened towards the point, in some individuals a little thicker than in others, reddish brown; the club usually blackish, but the depth of colour varies. The head and *thorax* are black, densely and finely punctate, with a fine short yellowish pubescence. The thorax is almost as broad as the elytra, broadest in the middle, straight at the base, the anterior angles rounded, and the posterior angles right-angled at the very angle; that is, when looked at superficially the angle would appear obtuse, but when examined more carefully there appears a very short space of right angle before the thorax takes its curved outline: the scutellum is proportionally large, and clothed with the same coloured pubescence as the thorax. The elytra are oval, densely and finely punctate, black, clothed with an ashen grey pubescence or bloom indistinctly striated: no yel-



Fig. 10.

low pubescence along the base of the elytra. The legs are reddish brown.

Its small size, shorter and more thickened antennæ, more uniform and less bellied outline distinguish this species from *picipes*, Fab. Its shorter and more thickened antennæ, the yellow pubescence on the thorax and scutellum, want of depressions on the disk of the thorax, and the want of the produced posterior angles of the thorax distinguish it from the smaller specimens of *nigricans*, Spence. Its antennæ only slightly thickened, as well as its smaller size, distinguish it from *chrysomeloides*, Spence. From most of those which have a decided yellow pubescence on the thorax it is distinguished by the want of yellow pubescence along the base of the elytra. This separates it from *tristis*, Panz., including *abdominalis*, Rosenh., *montivagus*, Heer, *longulus*, Kelln., *grandicollis*, Erichs., and *rotundicollis*, Kelln., and from *neglectus*, Kraatz, and *nigrita*, Erichs. Its yellow pubescence also is finer, shorter and more delicate than in any of these. The only remaining species with which it may be confounded is *morio*, Erichs., but the more elongate shape and slenderer form of *morio* and the difference in the posterior angles of the thorax distinguish it. *Morio* has not got the slight acumination which *coracinus* has at these angles, and in it they are gently obtuse instead of being at first right-angled. The thorax in *morio* is also flatter.

It is found in Scotland and England, and in various parts of the Continent.

12. *C. morio*, Fab.

Catops morio, Fab. Syst. El. ii. 564. 4.

Choleva dissimulator, Spence, Linn. Trans. xi. 150. 11.

Catops sericeus, Gyll. Ins. Suec. iv. 313. 1-2.

— *morio*, Erichs. Käf. d. M. Br. i. 240. 11; Sturm, Deutschl. Fn. xiv.

29. 14. t. 276. fig. b, B; Heer, Faun. Helv. 382. 14; Redt. Faun.

Aust. 144. 13; Kraatz, Stett. Ent. Zeit. xiii. 431. 13; Fairm. & Laboulb.

Fn. Ent. Franç. i. 301. 8.

Oblongo-ovalis, niger; antennis obsolete clavatis,

articulis duobus primis ultimoque et pedibus

ferrugineis; thorace basi apiceque latitudine

subæquali, angulis posticis obtusis; elytris ob-

soletissime striatis.

Long. $1\frac{3}{4}$ lin.

The antennæ are as long as the head and

thorax, imperceptibly but not greatly thickened

towards the point; the first two joints are ferru-

ginous yellow, the rest, with the exception of the

last, blackish, the last joint yellow; rarely the whole antennæ

are ferruginous, which Erichson observes is the case with the

examples in Fabricius's collection. The body is black; the

Fig. 11.



head densely and distinctly punctate; the parts of the mouth red. The *thorax* is rather *depressed* and is thickly and finely punctured, with a fine yellowish-grey dense pubescence; it is half as broad again as long, lightly rounded on the sides, somewhat narrowed in front, but behind only a very little narrower than in the middle; the posterior angles are nearly obtuse-angled; the posterior margin is truncate and straight. The scutellum has the same pubescence as the thorax. The elytra have an ashy-grey bloom, no yellow pubescence along their base, are densely punctate, nearly without traces of striae, a little widened in the middle, behind obtusely acuminate. The legs are ferruginous red, the thighs brown.

The same characters which distinguish *coracinus* from the other species in this group apply also to *morio*, and under that species I have already given a comparison of the differences between them. They are however closely allied.

This appears to be a rare species. So far as I know, it has not yet been taken in Scotland. It is found in England, and is widely spread over the Continent. It is included by Gebler in his list of insects found in South-west Siberia. M. Kraatz says it is found under leaves and in the chinks of wood.

13. *C. nigrita*, Erichs.

Catops tristis, Gyll. Ins. Suec. iv. 311. 1. 1.

— *morio*, Payk. Fn. Suec. i. 344. 2.

— *nigrita*, Erichs. Käf. d. M. Br. i. 239. 9.

— *tristis*, Sturm*, Deutsch. Faun. xiv. 24. 11. t. 275. fig. c. C.

— *nigrita*, Heer, Fn. Helv. 381. 12; Redt. Fn. Aust. 144. 13; Kraatz,

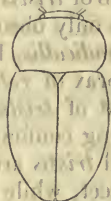
Stett. Ent. Zeit. xiii. 432; Fairm. & Laboulb. Fn. Ent. Franc. i. 301.

Oblongo-ovatus, niger; antennis obsolete clavatis
rufo-piceis, clava nigra, apice testacea; thorace
basi apiceque latitudine æquali, *angulis posticis*
ferè rectis leviter acuminatis; elytris obsolete-
sime striatis.

Long. $1\frac{2}{3}$ lin.

Oblong-oval. The antennæ are as long as the head and thorax, imperceptibly thickened towards the point. The first six joints are reddish brown, the remainder brown, the 8th joint not much smaller than the rest, the last joint oval, acuminate, yellow. The thorax is scarcely a half broader than long, rounded on

Fig. 12.



* Both from his figures and descriptions it appears to me evident that Sturm has transposed the names of *nigrita*, Erichs., and *tristis*, Panz. This has not been noticed by Kraatz or subsequent authors, but a very short perusal will I think convince them of it. For instance, of *tristis*, Panz., he says, "the thorax broad, short," &c., and of *nigrita*, Erichs., "the thorax narrower than the elytra, transverse," which is just reversing the characters of the thorax; and his figures speak for themselves.

the sides, broadest in the middle; nevertheless only a little narrowed in front and behind, in front rather narrower than behind; the posterior angles sometimes a little pointed*, the posterior margin straightly truncate, and only towards the middle very slightly sinuated. It is covered with a yellow silken pubescence. The elytra, as well as the whole body, are black; they have a brownish-blue or purplish peachy bloom, with a yellowish pubescence more conspicuous at their base and basal margins than on the disk. They are finely punctured, very imperceptibly striated, longish oval, in the middle a little widened, behind obtusely acuminate. The legs are ferruginous red, the posterior thighs sometimes brownish.

This is the first of a little group of species, which, with a decided yellow pubescence on the thorax, has a brownish-blue or purplish bloom on the elytra, accompanied with yellow hairs or pubescence conspicuous along the base and basal margins of the elytra,—a character which will limit our comparison to only two or three species. The two species just described, *C. coracinus* and *C. morio*, have also yellow pubescence on the thorax, but their elytra have not a purplish bloom, but a greyish-ash bloom, and want the yellow hairs along the base. The yellow pubescence on the thorax of these two also is feeble both in colour and consistence compared with those which follow. The form of the thorax of this species distinguishes it from all the others. Figure 13 shows the relative form of the thorax of *nigrita* and *tristis*, the plain line being the outline of *nigrita*, and the dotted line that of *tristis*. These two species are in other respects extremely alike. The antennæ however also furnish characters of discrimination—the club of *tristis* being heavy and thick, while the antennæ of *nigrita* are only obsoletely clubbed. The great breadth of the thorax of *grandicollis*, Erichs., easily distinguishes it; and the form of the thorax of *rotundicollis*, Kelln., which is an exaggerated form of that of *tristis* as above delineated (fig. 13), will prevent *nigrita* being confounded with that species. The elytra in both *nigrita* and *tristis* are elongate and give a long character to the whole insect, while *rotundicollis* has the elytra short and rapidly acuminate.

Fig. 13.



* Erichson in his description states that the posterior angles are pointed, but Kraatz says that he cannot agree with him in that respect:—"according to my view," he says, "they are right-angled, in not a few examples passing into obtuse-angled." I have examined a considerable series carefully with a view to determine this point, and find that both are right. I possess specimens which have the posterior angles pointed, and others where there is no appearance of a point, but the line of the base of the thorax perfectly straight. This is another proof of the variable character of the genus. It also shows us how inadequate are Spence's sectional divisions which are founded on this very character.

This species is widely spread, and is found under leaves, and under the carcasses of birds and small mammals.

14. *C. tristis*, Panz.

Helops tristis, Panz. Fn. Germ. 8. 1.

*Choleva Leachii**, Spence, Linn. Trans. xi.

Catops tristis, var., Gyll. Ins. Succ. iv. 312. 1.

— *tristis*, Erichs. Käf. d. M. Br. i. 238. 8.

— *nigrita*, Sturm, Deutschl. Faun. xiv. 24. 11. t. 275. f. c. C.

— *tristis*, Heer, Fn. Helv. i. 380. 8; Redt. Fn. Aust. 144. 12; Kraatz, Stett. Ent. Zeit. xiii. 433. 18; Fairm. & Laboulb. Fn. Ent. Fr. i. 302.

Oblongo-ovatus, niger; *antennis abrupte clavatis, clava fusca, articulo ultimo breviori*; thorax transverso basi apiceque latitudine subæquali, angulis posticis rectis; elytris obsoletissime striatis.

Long. $1\frac{3}{4}$ lin.

Of the same size and general form as the last species (*nigrita*, Erichs.); the thorax, however, is not so broad, particularly behind. Perhaps the commonest impression it makes on a first introduction is that of an insect with longish elytra and a disproportionately short, narrow, somewhat square thorax. The antennæ are nearly as long as the head and thorax, strongly thickened towards the point; the first six joints slender, reddish brown, those following brown, broader than long, the eighth not only much shorter but also narrower than the remainder of the club, the last a little larger than the preceding, with a cone-shaped point, generally pale at the tip†. The head and thorax are black, densely punctate, more or less wrinkled transversely, and thickly covered with a close yellow pubescence; the hairs springing from the wrinkled punctuation as shown in the magnified sketch represented in fig. 15. The thorax one-half broader than long, rounded on the sides, broadest in the middle, or perhaps rather a little before the middle, giving the *primâ-facie* effect of being narrowest behind; but on comparing the narrowness both in front and behind it is found nearly equal, or rather narrower before than behind. The posterior angles are sharply right-angled, the straight edge proceeding a little forward before

Fig. 14.



Fig. 15.



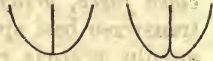
* As already mentioned, I have been unable to make out satisfactorily what the *tristis* of Spence is, and therefore have not added that as a synonym here.

† Erichson says that the last joint is brown like the preceding, but this is only the case sometimes; generally speaking it is paler.

the outward curve commences: the posterior margin is almost straight, only a little sinuate towards the middle. The elytra are covered with a brownish-blue or purplish bloom, and with some yellow pubescence most observable at the base and along the basal margins*. Under the bloom the elytra themselves are brownish, lightest at the base; they are densely punctate, with feeble traces of striæ, in the middle somewhat expanded, behind oval-acuminate. Under side and thighs dark brown, tibiæ ferruginous brown, tarsi ferruginous yellow.

Erichson adds that in the males the extreme termination of each elytron is produced into a single point. In the females the point is commonly rounded. My experience is that it varies indifferently.

Fig. 16.



This is a variable species, and under it, I think, should be comprehended not only the *C. abdominalis* of Rosenhauer, the *longulus* of Kellner, and the *montivagus* of Heer, but also the *grandicollis* of Erichson, and probably the *rotundicollis* of Kellner. These I shall include as varieties under this species, giving however a separate description of each, and where I have not seen the variety in nature, quoting the words of the author who described it.

Var. A. *C. abdominalis*, Rosenh. Beitr. Ins. Fn. Eur. i. p. 22.

“Oblongo-ovatus, niger; antennarum basi, abdominisque segmentis 2 primis ferrugineis; prothorace basi apiceque latitudine æquali, angulis posticis rectis; elytris obsolete striatis, antennis abrupte clavatis.

“Long. $1\frac{3}{4}$ lin., lat. 1 lin.

“Very similar to the *C. nigricans*, but smaller and not so convex; particularly like the *C. montivagus*, Heer, Fn. Helv. i. 381. I should consider it perhaps to belong to the latter, were it not that the posterior part of the abdomen of two examples which I possess from different districts of the Tyrol is uniformly of a different colour from that of the rest, a character which is not known to me in any other *Catops*, and which Heer must certainly have observed in describing his species had it existed in it. In the new species also the colour of the base of the antennæ and of the feet is much darker and the thorax is broader.

* It is perhaps scarcely necessary to say, that in speaking of the bloom and the pubescence on these species, I am speaking of perfectly fresh specimens in good condition. When the insect gets greasy and dirty the bloom no longer exists, and the yellow hairs get clogged together so that they look black. The best way in such cases is to turn them about in different directions, till the eye catches the light in which the pubescence or bloom best shows itself.

The head is not large; black, finely and densely punctate, with a yellowish-grey pubescence. The mouth is brownish. The antennæ are somewhat longer than the head and thorax, the first six joints brownish red, slender, the remainder black, broader than long, and thickened into a club towards the outer side; the eighth joint much shorter and more slender than the rest, the last somewhat more slender and about a half longer than the preceding, with an obtuse point. The thorax is densely wrinkled-punctate, and thickly clothed with close-lying yellowish hairs, transverse, about a half broader than long, rounded on the sides, broadest in the middle, narrower in front than behind, the anterior angles obtuse, the posterior straight, the posterior margin scarcely sinuated. The elytra are a little broader than the thorax, somewhat bellied out in the middle, oblong oval, usually attenuated to a point at the apex, densely and finely punctate and transversely wrinkled, covered with a grey pubescence and bluish hoar-frost, the sutural striæ very distinct, and in the middle of the elytra we perceive the trace of several striæ. Under side black, the thighs dark brown, the tibiæ ferruginous brown, the tarsi ferruginous yellow; the first two segments of the abdomen are of a lively ferruginous red, the remainder black, finely and densely punctate, delicately pubescent.

“Found in the Tyrol near Steinach and on the Franzenhöhe, 4000–8000 feet above the level of the sea*.”

The reader will see that the above is a pretty accurate description of *C. tristis*, with the exception of the colour of the first two segments of the abdomen. Colour is at all times a character of very doubtful value in Coleoptera, and the constant symptom of immaturity or of not fully developed colour is the substitution for black of a ferruginous brown or red of greater or less intensity, or over a greater or less extent.

I have not seen specimens of this variety in nature, but M. Kraatz, who had authentic specimens through his hands, states that it is a mere variety of *tristis*.

Var. B. *C. longulus*, Kellner.

Catops longulus, Kellner, Stett. Ent. Zeit. vii. 176; Redt. Fn. Aust. 771; Kraatz, Stett. Ent. Zeit. xiii. 433. 17.

Oblongus, niger; antennis obsolete clavatis, basi apiceque testaceis; thorace basi apiceque latitudine æquali, angulis posticis rectis; elytris obsoletissime striatis.

Long. $2\frac{1}{4}$ lin.

According to M. Kellner's description this species is distin-

* Rosenhauer in *loc. cit.*

guished by its long and slender form, and thereby easily separated from the remaining varieties or species in this division.

The antennæ are of the length of the head and thorax, moderately strong, black in the middle, the basal joints reddish, the terminal joint yellowish, the club a little thickened; the head and thorax are densely punctate, clothed with yellowish-grey hairs; the latter is gently rounded on the sides, narrowed in front and behind; the posterior margin is cut straight, and only slightly sinuated on each side of the scutellum. The elytra are long and uniform in their shape, densely and finely punctate, indistinctly striated, lightly covered with yellowish-grey hairs and hoarfrosted. The legs are black-brown, the feet brownish red.

M. Kellner states that he found this kind on high hills near the mountains (of Thuringia) "under moss and on exposed dead birds: very rare."

The only discrepancy which the above description shows between this variety and *tristis* is that the club is but little thickened, and that the elytra are long and uniform in their shape. The degree of thickness of the club of the antennæ varies in all the thick-clubbed species (of course within certain bounds); and the circumstance of its being found under dead birds sufficiently shows that this is one of the thick-clubbed species. Moreover, owing to the kindness of M. Kraatz, I have seen authentic examples of it, and am thus enabled to say that the antennæ are not of less thickness than they are in many other specimens of *C. tristis*. The length of the elytra, which is in point of fact the characteristic mark of this variety, is of no value as a character, scarcely any two examples of *tristis* having the elytra of the same proportions. In some they are more bellied out than in others, which makes them look not so long, and others are longer in point of fact, but they all have the same character which cannot well be mistaken, and this supposed species is only a variety with disproportionately elongate elytra.

I have found this variety in Scotland and England.

Var. C. *C. montivagus*, Heer, Faun. Col. Helv. i. 381.

"Oblongo-ovatus, niger; antennis basi, tibiis tarsisque rufo-testaceis, pronoto subtransverso, basi apiceque latitudine subæquali, angulis posticis rectis, acutis; elytris obsoletissime striatis; antennis abrupte clavatis, articulo ultimo penultimo vix longiore.

"Long. $1\frac{3}{4}$ lin.

"Very similar to *C. tristis*; chiefly to be distinguished by its thorax being a little longer, but narrower. The first five joints of the antennæ are rufo-testaceous, the eighth the smallest, much

shorter and narrower than those that follow, the last shortly ovate, scarcely longer than the preceding; the thorax much narrower than the elytra, a little broader than long, with the sides lightly rounded, behind subsinuate, very densely punctulated, clothed with a dense yellow silky pubescence; elytra oblong ovate, very closely punctate, but evidently impressed with a sutural stria; thighs pitchy black.

“Very rare in the Alps. (At the Gemmi near the Daubensee*.”)

The above description can I think be referred to nothing but *tristis*; the greater relative length of the thorax, which M. Heer specifies as the chief distinction, being doubtless either the result of variation in the length of the elytra, or one of the variations to which this species is subject. The next variety, which I refer to the same species, shows a much greater variation in the relative dimensions and proportions of the thorax.

Neither M. Kraatz nor myself have seen authentic examples of the above species, but M. Rosenhauer speaks of it (*supra*) as if he was familiar with it, and says that but for the colour of the last segments of the abdomen in his *abdominalis*, he would have referred that species to *montivagus*. M. Kraatz having ascertained *aliunde* that *abdominalis* was an immature specimen of *tristis*, differing only in the colour of these segments, it follows that *montivagus* is what the description would lead us to suppose, viz. a variety or synonym of *tristis*.

Var. D. *C. grandicollis*, Erichs.

C. grandicollis, Erichs. Käf. d. M. Br. i. 237; Heer, Fn. Col. Helv. i. 380; Redt. Fn. Aust. 144; Kraatz, Stett. Ent. Zeit. xiii. 432. 15; Fairm. & Laboulb. Fn. Ent. Franç. i. 300.

Ovatus, nigro-fuscus; antennis obsolete clavatis pedibusque rufis, illis apice nigricantibus; thorace transverso, coleopteris latiore, angulis posticis obtusis; elytris obsoletissime striatis. Long. $1\frac{5}{4}$ lin.

Somewhat of the form of the *C. nigrita*, but larger, and especially broader. Black-brown. The antennæ are not quite so long as the head and thorax, gradually slightly thickened, towards the point reddish brown, the last joint blackish. The head and thorax are densely punctured and granulated exactly as in *C. tristis*, clothed with close-lying yellow hairs. The latter is considerably broader than the elytra, more than one-half

Fig. 17.



* Heer in *loc. cit.*

broad than long, strongly rounded on the sides, the anterior angles rounded, the posterior angles obtuse-angled, the posterior margin cut straight, of the breadth of the elytra. These are oblong oval, somewhat convex, densely and finely punctate, indistinctly striated, brownish blue or purplish hoar-frosted, with a yellowish pubescence along the base and basal margins. The legs are brownish red.

This variety stands in a very different position from those which have gone before. They are so near the type, that they might without much harm have been described as synonyms. The present, on the contrary, differs in some respects widely from the type, and it is by no means surprising that it has hitherto been considered one of the best characterized and most distinct species.

The great breadth of the thorax is the prominent distinguishing character; its shape also is somewhat different, being nearer that of *C. nigrita*, Erichs. The grounds on which I have deemed it a variety of *tristis*, are first, that all the specimens of *grandicollis* I have taken have been in company with *tristis*, and they were generally without the admixture of another species except *rotundicollis*, which, as I have already said, I suspect to be another variety of *tristis*. The examples of *grandicollis* were almost invariably males*, and those of *tristis* for the most part females. In my earliest captures it so happened that I found nothing but males of *grandicollis* and females of *tristis*, and naturally came to the conclusion that they were the two sexes of the same thing. Subsequent researches have convinced me to the contrary, as I have now a good many male specimens of *tristis*, and one female of *grandicollis*. Still the great preponderance is as I have stated, and the result to which I have come is, that *grandicollis* is the normal form of the male, and *tristis* of the female; although, as is known sometimes to take place in other orders of animals, the female occasionally assumes the form of the male, or *vice versâ*. Another ground for assuming them to be the same species is their great general resemblance to each other, notwithstanding that the one has got such a broad thorax, while in the other it is narrow. This similarity is owing perhaps to the thorax in both being transverse, and the rest of the body of the same figure. The pubescence, colouring, wrinkling and punctuation are identical, and when two fine fresh specimens with their pubescence and bloom untarnished are placed together, I think it is almost impossible to avoid the conclusion that they belong to the same species. The differences that exist other than the broad thorax are very trifling. The antennæ of *grandicollis* are perhaps a trifle thinner and not

* Erichson founded his description on a "single male specimen."

so dark in the middle as in the generality of *tristis*, and the terminal joint is usually not paler than the rest of the club. But these are all variable items in *tristis* itself. I have specimens with their antennæ in every respect to the most minute particular the same in both kinds. The only other discrepancy is, that the slight sinuation on the hind margin of the thorax of *tristis* seems wanting in *grandicollis*. In a word, the only permanent difference is in the form of the thorax, which, in the face of the circumstances I have adverted to, does not in this instance appear to me a sufficient ground for constituting it a different species.

Another curious confirmation of this view is, that similar variations in the form of the thorax take place in *C. chrysome-
loides*. In fact, I possess specimens of the latter having exactly the form of *tristis*; the sole difference being that they are larger; the thorax is more coarsely granulated, its pubescence darker; the elytra more rounded and not so acuminate at the apex, their bloom also is ash-grey instead of purplish, their base is black instead of brownish, and the yellow hairs at the base are wanting. The antennæ are thicker and darker and the last joint is longer. These particulars serve to show that it is not *tristis*; and in addition these varieties are found mixed with large numbers of the normal form of *chrysome-
loides*. For instance, among about 200 specimens of *chrysome-
loides* which my friend Mr. Bates recently sent me, all taken together at one time, I found three or four with the form of *tristis*; also a specimen or two having in like manner exactly the form of *grandicollis*, but with the elytra not as in the variety of *tristis* bearing that name, but as in *chry-
some-
loides*; the antennæ are thicker and darker, but there is no other difference in the relative proportions, except in the last joint, which is not long, as it is in *chrysome-
loides*. Further, there were a few specimens in the same lot having the shorter form and more acuminate elytra of *rotundicollis*; and lastly, there were examples having the form of the thorax of *nigrita*. The result to which I have come therefore is, that similar variations in form exist both in *C. tristis* and *C. chrysome-
loides*; that as we have a variety of the former with a broad thorax (*C. tristis* var. *grandi-
collis*), we have also a variety of the latter of like form (*C. chry-
some-
loides* var. *grandicollis*). In like manner of each we have *C. tristis* var. *rotundicollis* and *C. chrysome-
loides* var. *rotundi-
collis*, and *C. tristis* var. *nigrita* and *C. chrysome-
loides* var. *nigrita*. We have a var. of *chrysome-
loides* like *tristis* (*C. chrysome-
loides* var. *tristis*), but I have not found any like resemblance to *C. chryso-
meloides* in *tristis*.

In all these varieties, however, there are certain general characters which appear to be constant, and enable us to refer each

variety to its proper species. These are the colour of the elytra and of its bloom, and the colour of the pubescence at the base of the elytra. There are also other characters, which, although they vary in individual species on the one side or other, are on the whole pretty constant. The antennæ of *chrysomeloides* are almost invariably considerably thicker than in *tristis*, and the last joint longer. The pubescence of the thorax (except in the same variety) is browner than in *tristis*, and, except in the var. *rotundicollis* of *tristis*, is more coarsely granulated. The form of the apex of the elytra, except in the same variety, is also rounder in *chrysomeloides* than in *tristis*.

Var. E. *C. rotundicollis*, Kellner.

C. rotundicollis, Kellner, Stett. Ent. Zeit. viii. 176. 2; Redt. Fn. Aust. 771; Kraatz, Stett. Ent. Zeit. xiii. 434. 19; Fairm. & Laboulb. Fn. Ent. Fr. i. 302.

Ovatus, nigro-fuscus; antennis obsolete clavatis; pedibus rufo-piceis; thorace transverso subruguloso, lateribus fortiter rotundatis, angulis posticis rectis; elytris apice obsolete striatis.
Long. $1\frac{1}{2}$ lin.

Fig. 18.



The antennæ are scarcely so long as the head and thorax, thickened towards the point, reddish brown, lighter at the base. The head and thorax are densely punctate, or rather granulated and densely covered with yellowish grizzly hairs; the latter is strongly rounded on the sides, most so towards the front, narrowed behind, the anterior angles rounded, the posterior angles almost pointed and right-angled, the posterior margin cut straight, and slightly sinuated on both sides near the scutellum. The elytra are oval, a little convex, densely and finely punctate, indistinctly striated, with a bluish or purplish bloom or hoar-frost on them, and also with yellowish hairs particularly at the base, and are narrowed to a point at the apex. The legs are brownish red, the feet lighter.

This variety or species is found along with *tristis* and *grandicollis*, but it is not without hesitation that I remove it from the list of distinct species. The characters, however, which distinguish it being all variations in degree, and at times approaching more or less to the type of *tristis*, I have come to look upon it as a variety of that species. It is well known that carcase-feeding beetles are always more subject to variation than others, owing to the chance of the food of the larvæ becoming exhausted before they are full fed. This species may be a starved variety. The particulars however by which it is most readily distinguished

are its smaller size, the strongly rounded edges of the thorax inflexed towards the base, and perhaps more than any other, the more strongly marked punctuation or rather granulation on the thorax; but none of these distinctions appear to me sufficient to justify its being kept as a distinct species. As to its size, although it is only about half the size of *grandicollis*, I have undoubted specimens of *tristis* quite as small as it; and even of *grandicollis* I have seen a specimen received by M. Kraatz from Thuringia not much larger. The general cut of the thorax is that of *tristis*, but broader in front. The elytra terminating sharply is a character also shared by *tristis*. The bluish or purplish bloom on the elytra is perhaps not quite so marked a feature as in *tristis*, but it is still well developed, and the yellow pubescence on the thorax and along the base of the elytra is the same. The distinction most appreciable is the punctuation or rather granulations on the thorax. To the naked eye, or under a weak lens, the thorax looks as if it were more coarsely punctate and of a coarser texture than in *tristis*. Under a higher magnifying power it assumes the aspect shown in fig. 19, and a comparison of that with fig. 15 and fig. 20, exhibiting the marks on the thorax of *tristis* and *neglectus* (next species), will show that it occupies a medium place between them. This punctuation in *rotundicollis* however is not always equally coarse, showing gradations to the feebler granulations of *tristis*.

Fig. 19.



It is not a rare variety, and is found under dead birds, &c. both in England and Scotland and all over the Continent.

15. *C. neglectus*, Kraatz.

Catops neglectus, Kraatz, Stett. Ent. Zeit. xiii. 434. 20.

Ovatus, nigro-fuscus; antennis obsolete clavatis pedibusque rufopiceis; thorace transverso, postice angustiore, *variolariter punctato*; elytris apice substriatis.

Long. $1\frac{1}{2}$ lin.

Shape entirely that of *tristis*. Antennæ obsoletely clavate, reddish brown. The head is black, deeply, densely and distinctly punctate. The thorax is in the middle almost of the breadth of the elytra, nearly half as broad as long, somewhat convex, the sides moderately strongly rounded (exactly as in *tristis*), more narrowed behind than in front, so that the greatest breadth is before the middle. The posterior angles are right-angled, the posterior margin feebly sinuated on each side in

front of the scutellum. It is covered with a dense yellow pubescence as in *tristis*, but is not granulated like it, but covered with shallow punctures, so that under a strong lens it looks exactly as if pitted with the small-pox, and out of each shallow flat pit issues a yellow hair (sometimes two, springing from the same centre); these pits are arranged in a sort of irregular transverse order (see fig. 20), which gives the thorax to the naked eye the appearance of being strongly transversely wrinkled. The elytra are densely and finely punctate, with indistinct, very evanescent traces (when highly magnified) of similar depressions being scattered over them, and with indistinct traces of striae at the apex; they are clothed with a purplish brownish bloom similar to that of *tristis*, and with yellowish hairs principally seen at the base. The legs are brownish red, feet lighter.

Fig. 20.



Till this species was made known by M. Kraatz, it had been always overlooked. On a hasty glance it looks exactly like *tristis*; a little better inspection, particularly of the apparent granulations on the thorax, leads one to suppose it is *rotundicollis*, but a careful examination brings out the much deeper and differently formed punctuation of the thorax. This is the only character to be relied on to separate it from *tristis*; for although the antennae are not so abruptly or heavily clavate as in that species, and are entirely of a reddish brown instead of having a blackish club, still in neither particular are they so different as to be beyond similar variations to be found in the true *tristis*. I therefore felt great difficulty in making up my mind whether they were distinct species or not. Thanks to the liberality of M. Kraatz, who supplied me with specimens of his *neglectus*, I was enabled to examine them all very carefully, which I did under high powers of the compound microscope, and although there is in one sense undoubtedly a transition between *tristis* and *neglectus* through *rotundicollis*, inasmuch as while the sculpture of the thorax in *tristis* is slightly wrinkled, that of *rotundicollis* is granulated, and that of *neglectus* variolose, still there did appear a greater difference between *neglectus* and *rotundicollis* than between the latter and *tristis*. It is not easy to embody the difference in words, but I am enabled by the kind assistance of Dr. Greville, whose qualifications as a microscopic observer and microscopic draughtsman are unsurpassed, to submit the differences to the reader, in the woodcuts, figs. 15, 19 and 20, drawn by him, which show the sculpture of the thorax of the three kinds as seen under a magnifying power of 280 diameters. These I think prove the close relationship of *rotundicollis*, fig. 19, with

tristis and *grandicollis* (both of which are exactly the same), fig. 15: the punctures from which the hairs issue are only a little larger and deeper in the former than in the latter, which also shows the first faint traces of the circular depressions between these punctures in the former. In *neglectus* however, although there are deep circular depressions, these are on a totally different arrangement from those in the other species. Here they surround the puncture from which the hairs spring, while in *rotundicollis* they are placed between the hairs. In *neglectus* the concave curve of the depression is turned towards the hair, in *rotundicollis* it is the convex curve which is turned to it.

Although the character is narrow, I incline to think that this is a good species, more especially as M. Kraatz mentions that nothing approaching to a transition between it and *rotundicollis* has been found.

This interesting species was taken by M. Kraatz in Hessia, but I have not yet observed it in any collection made in this country.

16. *C. quadraticollis*, Aubé.

Catops quadraticollis. Aubé, Ann. de la Soc. Ent. de Fr. 1850, viii. 326. 35. t. 11. f. 3; Fairm. & Laboulb. Fn. Ent. Fr. i. 302.

Oblongo-ovalis, convexiusculus, niger; antennarum articulis primis et ultimo, tibiisque ferrugineis; thorace quadrato, vix postice angustiore, angulis posticis rectis.

Long. $1\frac{5}{4}$ lin.

Oblong-oval, convex. Brownish black, covered with a sparing yellowish-grey pubescence; mouth and base of the antennæ obscure ferruginous. Antennæ gradually clavate, a little longer than the head and thorax. Thorax almost as broad as long; sides feebly arched, almost straight, except in front, where they are pretty strongly rounded; posterior angles right-angled, a little sharply pointed; very finely and densely punctate. Elytra with a more marked punctuation, very dense; sutural stria deep, disappearing on the anterior third. With a strong lens some traces of striæ are perceptible. Thighs brownish black, tibiæ and tarsi obscure ferruginous.

This species is almost of the size of *tristis*, which it comes very near in form and colour. It is however a little more elongated and generally deeper in colour, and the antennæ are less clavate; but the principal difference is in the form of the thorax, which is nearly as long as broad and rectilinear on the sides, in fact nearly square; the posterior angles also are straighter. Dr. Aubé

Fig. 21.



says that the lateral margins are a little more rounded in the males than in the females, but always less so than in *tristis*.

I have seen one female example of this species, in the collection of M. Chevrolat. At first I was disposed to consider it as a variety of *tristis*, but on closer examination I became satisfied that it is a distinct species; at least, that we must hold it so until a closer study of its affinities and alliances shall teach us otherwise.

17. *C. chrysomeloides*, Panz.

Helops chrysomeloides, Panz. Fn. Ger. 57. 1.

Choleva chrysomeloides, Latr. Gen. Crust. et Ins. 29. 4; Spence, Linn. Trans. xi. 146. 7.

Catops chrysomeloides, Erichs. Käf. d. M. Br. i. 697. 7 a; Sturm, Deutschl. Fn. xiv. 22. 10. t. 275. f. b. B; Heer, Fn. Helv. 380. 9; Redt. Fn. Aust. 144. 10; Kraatz, Stett. Ent. Zeit. xiii. 432. 16; Fairm. & Laboulb. Fn. Ent. Fr. i. 302.

Ovatus, nigro-piceus; antennis *abrupte clavatis*, *clava nigra nitidula*, *articulo ultimo oblongo*; thorace transverso, basi latiore, *angulis posticis rectis*; elytris obsolete striatis.

Long. 2 lin.

Ovate, convex; deep brown or black, with a pretty dense pubescence. Antennæ shorter than head and thorax, strongly and abruptly clavate, the base (first six joints or so) red, the club black or deep brown, the fourth, fifth and sixth joints not longer than thick, also not thicker than those preceding, those following considerably thicker, the seventh, ninth and tenth somewhat thicker than long, brown; the eleventh oblong oval; the eighth narrower than the other joints of the club, very short. Thorax one-half broader than long, rounded on the sides, narrowed a little more in front than behind; at the posterior margin a little narrower than the base of the elytra; the posterior angles right-angled, pointed; the posterior margin lightly sinuated on each side, covered with a coarse yellowish grizzly pubescence. Elytra like the thorax, very finely and densely punctate, very indistinctly striated, with an ashy grey bloom; no yellow pubescence. Legs ferruginous red, often brown on the thighs.

This very distinct species is distinguished at once by the large black club of its antennæ. When seen along with other species, its gloomy black opaque appearance, combined with a larger club of the antennæ than any other species, at once point it out. The only other large black species in this group are *picipes* and *nigricans*, and neither of these has heavy thick-clubbed antennæ. From the other thick-clubbed species (none of which however

Fig. 22.



have antennæ equal to it in thickness), it may be quickly distinguished by its gloomy black colour, and by the dull ash-grey bloom on the elytra. The pubescence on the thorax is dull grizzly yellow, a good deal coarser than the strong rich russet yellow of *tristis* and the other thick-clubbed species; and the bloom on the elytra wants the purplish tinge observable in these species; and there are no yellow hairs along the base or margins of the elytra, which are not lighter in colour themselves than the thorax. Immature specimens wholly ferruginous brown are occasionally met with. The thickness of the club of the antennæ is also not always equally great, but always greater than in any other species.

As I have already mentioned in speaking of the varieties of *tristis*, similar varieties occur of this species, viz. :—

Var. *grandicollis*, with larger broad thorax.

Var. *tristis*, with narrow short thorax and broad elytra.

Var. *rotundicollis*, of the shape of *rotundicollis*, but larger.

Var. *nigrita*, of the shape of *nigrita*.

For the differences between these varieties and the similarly named varieties of *tristis*, see the remarks on page 150.

As I have already mentioned, this species used very generally to be made to represent both *tristis* and *chrysomeloides* by British and even foreign entomologists.

It is found under small dead birds and mammals. Mr. Bates of Leicester has taken hundreds (and supplied me largely) by a simple trap which is very useful for taking some of our rarest *Clavicornes*. He puts three or four rabbits' feet into a soda-water bottle, buries it in a favourable locality, so that the mouth of the bottle is level with the ground, and in a week or ten days the interior of the bottle is swarming with insects, among which great rarities occasionally occur.

[To be continued.]

XVI.—On a new British species of Skenea.

By W. WEBSTER, Esq.

[With a Plate.]

To the Editors of the *Annals of Natural History*.

GENTLEMEN,

THROUGH the kindness of C. Spence Bate, Esq., I am enabled to send you a drawing (Pl. VIII. figs. 12, 13) of an extremely minute *Skenea* which I found in sand, taken amongst *Corallina officinalis* from rock-pools at Gwyllyn Vase near Falmouth.

It is involute, like *Skenea nitidissima*, and equally umbilicated